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ABSTRACT

A discussion of the language problems encountered by professionals working overseas and of how to meet the English language needs of these individuals draws on analyses of native-speaker discourse and on excerpts from non-native-speakers' writing about professional subjects. The topics of the excerpts include management, technology, and forestry. The discussion of the English language needs of this group focuses on vocabulary development, and a framework for isolating and identifying overlooked elements that bridge non-technical and technical vocabulary is presented. Types of bridging vocabulary identified include: (1) transitions (grammatically non-essential expressions that express relationships between ideas); (2) adjectives and adverbs that add evaluative comment or a sense of time, magnitude, quantity, or quality; (3) phrases, particularly noun phrases and some prepositional phrases; and (4) verb structures and their subsets. Bridging vocabulary is not discipline-specific, although some forms of bridging vocabulary may be more prevalent in some fields than in others. Analysis of written non-native-speaker texts indicates that high-intermediate to advanced English learners initially tend to control technical and general vocabulary and then, with difficulty, to use bridging vocabulary. It is concluded that language training for international non-native-English-speaking professionals should address bridging vocabulary. (MSE)

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ENGLISH NEEDS OF INTERNATIONAL PROFESSIONALS

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Bridging Language: Meeting the English Needs of International Professionals

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As a Fulbright scholar in Peru in 1987, I was asked to address the problem of English-language instruction which, in the view of many host nationals, only minimally prepares people for using English in professional settings. (I encountered the same problem in teaching/teacher-training experiences in China and Brazil several years ago.) For a variety of reasons, English-language students (future and practicing professionals) receive instruction in certain areas of non-technical English, and through classes or on their own, learn the field-specific vocabulary of, e.g., banking, engineering, or forestry. However, they often lack the bridging elements--the non-technical but "academic" elements of English which cross disciplines and link concepts together--terms such as concurrent or Generally speaking, verbs such as refer to or to emphasize which recur in unified spoken and written English discourse. Thus the professionals are unable to communicate professional ideas, solve problems, or interact with others as effectively as they could.

The ideas presented here draw on a number of overseas sources--curricula, textbooks, materials used at various language institutes and universities; conversations and workshops with students, instructors, administrators, teacher-trainers, and professionals; combined with my years of experience as an ESL/EFL teacher, materials developer, textbook evaluator and writer, and teacher-trainer.

The paper begins with a brief analysis of various English language needs of professionals abroad, focusing on the role of vocabulary in language proficiency. Then a preliminary framework is presented for isolating and identifying "overlooked" elements which bridge non-technical and technical vocabulary. These elements, important in the training of overseas professionals in many fields, will be examined in several examples of native-speaker discourse and then in excerpts of non-native-speaker writing about professional concepts.

What English language skills do overseas professionals need? It used to be thought that a professional merely needed to be able to read English, e.g., an engineer had to read technical specifica-

tions, an agronomist needed to read agricultural reports, a banker needed to read financial statements. University-level education overseas encouraged (in many cases, still encourages) this skill of reading, through English curricula in specialized reading. In many universities overseas, English teachers have students read and translate highly technical journal articles (some out of date due to limited access to recent materials).

As professionals (and many teachers) have long since become aware, the needs go far beyond discipline-specific reading and translation. Many need to understand spoken English and to converse in English about issues in their field; some need to write English, whether in internal memos, reports, or transactions; and some even need to prepare ideas for international presentation in spoken or written form, when the expected language for exchange of ideas is often English.

Underlying the four traditional language skills (listening, speaking, reading, writing) are a number of basic components of language, including vocabulary, the focus of this paper.

The vocabulary which professionals overseas need is varied. Certainly they need the vocabulary specific to their discipline: the mechanical engineer needs terms for engine parts, mechanical movements, etc. The agronomist may need terms for types of trees or soil. The bank manager may need to know concepts referring to international business or data management. This is the vocabulary typically found in the glossary or in exercises in English-for-specific-purposes texts. Focus is primarily on nouns and verbs, perhaps some phrases or special expressions, less commonly on adverbs or adjectives. Students make a conscious effort to learn this vocabulary before they become professionals and continue to learn new items on the job as the vocabulary changes or their jobs change. This vocabulary will be referred to as professional or technical vocabulary, concepts which are discipline-specific.

An examination of native-speaker texts from a variety of fields will disclose technical vocabulary in each. Text A concerns management, Text B discusses technology and management, and Text C (spoken discourse) discusses a forestry concern.

Technical vocabulary in A includes, but is not limited to: quantitative analysis, practicing managers, team of specialists, quantitative techniques, companywide issues, operations research (OR).

Text A

Other developments in quantitative analysis are being brought forth by researchers and are rapidly being adopted by practicing managers. In fact, the approach of a team of specialists, working together to frame quantitative techniques for making decisions on companywide issues, has led to the creation of a new analytical profession called operations research (OR). The limits of operations research are ill-defined because its applications are continually breaking out of previously conceived frameworks and deal with a wide range of problems including defense systems, outer space, and management. (Massie, 1979)

Text B

The plant is divided into two parts: a labor-intensive assembly line and four capital-intensive machining areas. The latter areas, called "transfer lines," constitute the heart of the plant where raw castings are shaped into major, tight-tolerance engine parts. Each transfer line can be as big as a football field, and costs between \$10 and \$20 million....

In fact, workforce "churning"--created by workers who leave the company or are promoted--has become a leading concern among production managers, some of whom feel that the initial selection process yielded overqualified workers. Turnover for hourly workers was 30 percent in 1984 and 23 percent in 1985. Termination owing to absenteeism accounted for over a third of the 1985 turnover. (Shaiken, 1988, pp. 41-47)

Text C

From an ecological point of view, the pine trees perform a very useful function by providing a lot of protection to the soil surface immediately within the canopy. Under this tree you can see the pine litter is already becoming decomposed and being incorporated into the soil. And the soil itself is becoming nice and friable and loose, which contrasts very strongly with the harsh environment immediately outside the canopy of the tree. And underneath this tree, the environment has been improved to such an extent that...a broad-leafed tree has already become well and truly established. (Don Gilmour, Australian forestry consultant in Nepal, in "Will the World Starve?," 1987)

In B, technical vocabulary includes labor-intensive assembly line, capital-intensive machining areas, "transfer lines," raw castings, tight-tolerance; production managers, selection process, over-qualified, turnover, hourly workers, termination, absenteeism. Text C contains these forestry terms or expressions: soil surface, canopy, decomposed and incorporated into the soil, friable, harsh environment, broad-leafed tree, become established, among others.

On the other end of the vocabulary spectrum is a vast lexicon of "general" English. This includes everything from survival English, to colloquial street language, to vocabulary used widely by semi-educated to educated persons who have learned some English. The professional overseas needs this vocabulary for many purposes. Even in the most technical context, there are words which are part of the basic lexicon of English. This vocabulary is emphasized and practiced in every basic textbook of English and forms a vital part of communication in English. Whether the professional is engaged in conversation, reading an article in English, reading a box label, that vocabulary is essential.

In the text samples by native speakers, this general vocabulary is relatively easy to identify, though sometimes an item may be both general and technical/professional within a certain context or purpose. Some instances of general vocabulary in the texts are: A--developments, adopted, working together, making decisions, applications, defense systems, outer space; B--parts, areas, created by, as big as, 30 percent, over a third of, \$20 million; C--pine trees, providing, protection, under this tree you can see. The purpose here is not to label all of the general vocabulary or draw sharp lines but to suggest that there is still another type of vocabulary hidden in discourse, a type which is often overlooked in second-language instruction.

This vocabulary not yet classified is as essential as either of the other two types mentioned, yet probably is the most neglected. It is the bridge between professional/technical and general/non-technical vocabulary; for that reason I call it bridging language or bridging vocabulary. It would appear to be the missing link referred to by a Peruvian bank manager who had studied in a binational center for years, and continued his English studies in highschool and the university. Even though he had continued to read and study on his

own and used some English on the job, he still felt inadequate. As he put it: "I know all the words in English, but I can't put them together." Similarly, a visiting scholar in information management from Yugoslavia, upon receiving back a professional paper written for a professor in her field, commented: "I need the expressions to put my ideas into." Despite her high proficiency in spoken and written English, she sensed a missing element or bridge in her discourse.

With technical and non-technical vocabulary already identified, bridging vocabulary begins to emerge. In the native-speaker texts, there are words and expressions which are neither discipline-specific terms nor "general" vocabulary. They tie those two together yet are usually neither. (Clearly it is an oversimplification to divide vocabulary into three seemingly distinct groups. There are overlaps, terms that are professional in one context, more general in another. Some of the bridging vocabulary elements may be considered part of the general vocabulary, high-frequency links such as verbs and transitions. Distinctions are made here for purposes of discussion, not for definitive classification.)

In some situations, this vocabulary is called part of "academic English." I first used the term "academic" in the 1970s (Martin, 1976) with reference to vocabulary, and the term academic is now a designation in the title of many ESL and native-speaker texts and articles (especially regarding reading and writing). Bridging vocabulary is certainly "academic," but its use goes beyond the academic environment to the workplace and to non-professional contexts as well.

There seem to^{be} many types of bridging vocabulary, some of which are treated extensively in ESL instruction, some which are not. The following classification is preliminary, an effort to shed light on the pervasiveness, complexity, and importance of bridging vocabulary.

One type of bridging vocabulary is transitions--those expressions which are non-essential grammatically but which function as useful signals of relationships between ideas. These include in addition, therefore, next, and others. Transitions are very important, especially in written or formal spoken English, but they tend to get coverage in teaching materials, perhaps in part because they are easy to put into lists. There are some transitions, however, which

are less common and thus sometimes overlooked in such lists. A recurring example in the three native-speaker samples is in fact.

Another type of bridging vocabulary is adjectives and adverbs which add evaluative comment or a sense of time, magnitude, quantity or quality. Again, these are not structurally essential, but they help a reader or listener better understand the ideas. Examples from the samples are A--rapidly, ill-defined, continually, previously; B--latter, leading, initial; C--strongly. Others such as major, useful, wide are higher frequency and may be considered part of general vocabulary.

A third set is phrases, particularly noun phrases and various prepositional phrases. Some are part on one's general vocabulary (e.g., as big as in C). Bridge noun phrases in the samples include: A--the creation of, a range of; B--a (leading) concern among, and others. Other expressions which begin with or contain a preposition include owing to in B, and from (X) point of view and to such an extent (often before a that clause), both found in C.

Such phrases are critical in the explanation of professional ideas yet rarely are taught explicitly in ESL. Usually they are grammatically essential, and certainly they transmit important meaning and relationships between ideas.

By far the largest group of bridging vocabulary in the samples is verb structures. Again it is worth noting that these phrases are not used in only one field but rather across disciplines. Thus, like all bridging language, they not only bridge language use within a piece of discourse but also bridge or cross field boundaries. Bridging verbs (given as infinitives) found in the sample texts include: A--to bring forth, to lead to, to be called, to break out of, to deal with; to be divided into, to constitute, to yield, to account for in B; and in C--to perform (a function), to contrast with.

Bridging verbs can in turn be divided into sets, for example, according to the relationship they carry. The samples include verbs that convey cause or result (bring forth, yield, account for, lead to); parts of a group (constitute, divide into); contrast (to contrast with); definition (to be called); and others. There are many other members of each set, and many other ways to group bridging verbs. However they are grouped, they are important in teaching and provide opportunities to work on tense, active versus

passive voice, and other grammatical concerns.

Certainly there are other sets of bridging vocabulary, instances of which did not emerge from the target texts of native-speaker discourse. For example, there is an important set found in introducing and concluding ideas. The selections used here were randomly selected from the middles of discourse; other samples might have yielded such transitions and structures as finally, in conclusion, from the outset, it is recommended that, etc. Another set revolves around research, and might include such items as validate, positive relationships, to cite. There are also grammatical structures such as subordinating words and phrases which might be viewed as bridging language. Certainly items like although, as a result of tie ideas together. However, most are high-frequency elements of general (especially written) English discourse as well as treated extensively in ESL teaching and therefore are not a primary concern of this paper.

Bridging language, then, is not specific to any particular discipline, though certain items and phrasings may be used more in discourse in one field than in another. Nor is bridging vocabulary solely part of the general vocabulary which second-language learners of English are taught for use in daily situations, although some of the high-frequency expressions may be of general use. Bridging language is the link between general, non-technical vocabulary and professional/technical vocabulary. It is essential to clear, effective expression of ideas in a professional context. It serves a variety of functions, some of which are: to clarify, develop, support ideas; to introduce, re-express, summarize ideas; to show relationships (e.g., contrast, addition, cause and effect, classification) between ideas. Without mastery of bridging vocabulary, a non-native speaker of English is not fully proficient; and a professional may not be able to communicate ideas as effectively as he or she might.

If one examines non-native speaker discourse in English, one finds evidence of this problem. High-intermediate to advanced students tend to control a range of technical and general vocabulary and to try to use bridging vocabulary, encountering difficulty with the latter.

Two texts are presented here for examination. Text D was written by a graduate student in chemistry, a researcher from China.

Text F was written by an Indonesian graduate student in public administration who was a professional urban planner. In an ESL class in the U.S., each student wrote a definition of a technical term in his field (text excerpts, both original and revised versions, have been edited for spelling and punctuation).

Professional vocabulary in D includes ligand, transligand, transeffect, be replaced by. General vocabulary includes in the center, the same, very fast, very slowly, and at most time (revised to most of the time). Of particular interest is the bridging vocabulary, the area in which the student had the greatest difficulty and made the most revisions: different → different from, in other word → in other words, call → say (they) have, in general, and respectly (→ respectively).

In Text E, professional vocabulary includes housing, city planning, public housing, urban development, among other items. The general vocabulary items include building for (people) to live in, important word, match, comfortable, and plan. This text was not revised (possible revisions are given in parentheses), but again the area of greatest difficulty is bridging vocabulary. Instances include: is very close to, concern (are concerned) with, the more clear (the clearer), have an important corelationship (...relationship to), for example, aim directly at, on (the) other hand. The intended expression for "to colate" may have been "to correlate with." What is important to note is that first, the writer of Text E has difficulty in expressing professional ideas and has not mastered the choice between professional and general phrasing. Second, bridging vocabulary is a major problem area, one which can be isolated and worked on by the student and instructor.

The two non-native-speaker samples illustrate some control of professional vocabulary; mixed mastery of general vocabulary; and progress toward, but not yet full competence in, use of bridging vocabulary to interconnect or "bridge" professional and general vocabulary in professional discourse.

ESL materials for the language training of international non-native-speaker professionals can and should address bridging vocabulary. Teachers may assume that students already control this vocabulary, but as illustrated, that is not necessarily the case. Precisely because bridging vocabulary often involves modifiers, more complex transitions, phrases with prepositions, it causes prob-

Text D

Some compounds have a structure of...one metal in the center and four ligands on the four right angles. The four ligands may be same but at most time they are different each other. Every ligand can leave this compound. In other word, every ligand can be replaced by other ligands....Some made the transligand leave the compound very fast, and some ones just make the transligand leave very slowly. We call them to have strong transeffect or weak one, respectly.

Revision: The four ligands may be the same kind but in general they are different from each other. You can use other chemicals to replace any one of these four ligands....Some cause the transligand to be replaced a little easier; we say they have strong transeffect.... (Chinese chemistry student)

Text E

The Housing is an important word in the Architecture or City Planning. Its meaning is very close to word "House." In the common term, the "House" means the building for human being(s) to live in. The larger number of people who concern with the housing the more clear what Public Housing mean(s)....They have an important co-relationship each other. For example the Public Housing not only should match with the urban development plan of the city to develop in an equilibrium condition, but also aim directly at the distinctive features of the areas to colate (?) the comfortable living environment. On other hand, the city planning should have a proper plan ...for cultural and social activities. (Indonesian student in public administration)

lems in language learning and use, and may be particularly difficult for a professional eager to learn more English on his/her own to identify and work on systematically. Yet few materials address this need; some recent ESL materials are moving in that direction, but often these are not available overseas. Thus there is an ongoing gap in the professional's access to vocabulary he/she needs for effective expression of ideas.

There is a further issue in teaching/learning bridging vocabulary. When students make "errors" in use of such terms, teachers sometimes just "edit," e.g., correct the preposition or other problem, or have the student do so, without drawing attention to the full bridging phrase and/or the relationship it establishes in the discourse.

Overt focus on bridging vocabulary in the classroom is feasible--and essential. Pre-professionals and professionals need bridging vocabulary to express their professional ideas in English. The preceding analysis has suggested some of the complexity, subsets, and functions of bridging vocabulary. Bridging vocabulary is accessible. It thus can be isolated within, but should always be discussed as an integral part of, unified discourse in English.

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